

# PATENT SPECIFICATION

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## (54) FASTENERS FOR DIAPERS

(71) We, COLGATE-PALMOLIVE COMPANY, a Corporation organised under the Laws of the State of Delaware, United States of America, of 300 Park Avenue, New York, New York 10022, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to diaper fasteners such as are suitable for use on disposable diapers.

Diaper fasteners which comprise adhesive tape units have become quite popular in recent years and a number of different forms of such tape units have been proposed.

It is an object of the present invention to provide a diaper fastener comprising an adhesive tape unit and which is of improved appearance and operation, and also to provide an improved diaper-and-fastener combination.

According to one aspect of the present invention a diaper fastener for use on a diaper having a plastics backing sheet comprises a strip of tape folded into a "Z" configuration having contiguous first, second and third portions, the strip having a front surface and a rear surface and being coated with an adhesive on the front surface of the first and third portions, the front surface of the second portion being free of adhesive, and the front surface of the third portion being in contact with the front surface of the second portion thereby forming a sub-unit comprising the second and third portions, which sub-unit is releasably attached to the rear surface of the first portion.

The adhesive-coated front surface of the first portion is intended to be secured to the plastics backing sheet of the diaper ad-

jacent a lateral margin of the diaper, the unit being compact and of neat appearance with the sub-unit releasably attached to the first portion so that it can be unfolded from the first portion, while the third portion can be unfolded from the second portion to expose the adhesive on the third portion ready for adhesive attachment to another area of the diaper when the diaper is being applied to an infant.

The sub-unit can be releasably attached to the first portion in various ways. In one form of the invention the second portion has an opening through which adhesive on the third portion is exposed for contact with the rear surface of the first portion. In another form of the invention there is a spot of hot melt glue between the rear surfaces of the first and second portions. This spot of glue may be deposited during the manufacture of the diaper (and/or the fastener) and will quickly set to achieve the desired result but will be sufficiently small for the bond to be broken easily to release the sub-unit when desired.

Preferably the fastener includes a grippable tab projecting from the third portion of the strip of tape, to facilitate the unfolding operation.

According to another aspect of the invention a diaper comprises a plastics backing sheet and a fastener as aforesaid adhesively secured to the backing sheet by means of the adhesive on the front surface of the first portion of the strip of tape.

In one form of this aspect of the invention the diaper is a disposable diaper having an absorbent body and a plastics backing sheet folded into a box pleat configuration which provides an undersurface of a lateral box pleat flap, and the fastener has a grippable tab as aforesaid and is secured to the backing sheet with the grippable tab projecting beyond the lateral marginal edge of the flap.

The invention may be performed in various ways, and two embodiments will now be described by way of example with reference to the accompanying drawing, in which:—

Figure 1 is a perspective view of one form of diaper and diaper fastener embodying the invention;

Figure 2 is a sectional view taken on the line 2-2 of Figure 1;

Figure 3 is a view similar to Figure 2 showing the fastener partially extended;

Figure 4 is a view similar to Figure 2 showing the fastener fully extended and in position for securing the diaper to an infant; and

Figure 5 is a view similar to Figure 2 of an alternative embodiment.

Referring to the drawings, a diaper 10 is folded into a box pleat configuration having flaps 12 with undersurfaces 14 and lateral margins 18. As best seen in the sectional views of Figures 2-5, the undersurface 14 of the flap 12 is provided by a plastics backing sheet 20. An absorbent body 22 is sandwiched between the plastics backing sheet 20 and an inner water-perVIOUS liner 24.

The fastener 26 comprises a strip of tape 28 folded into a "Z" configuration as presented to the consumer (i.e. as shown in Figures 1, 2 and 5). The three portions 30, 32, 34 which form the "Z" are of substantially equal length and a grippable tab 36 is provided which projects from the third portion 34. A front surface of the strip of tape 28 (i.e. the upper surface as seen in Figure 4) is coated with an adhesive 38 in the regions corresponding to the first and third portions 30, 34. The front surface of the second portion 32 and the entire rear surface of the tape 28 are free of adhesive.

Referring to Figure 2, in the folded or "Z" configuration of the fastener 26, the front surfaces of the second and third portions 32 and 34 face each other. The front surface of the second portion 32, bearing no adhesive, may be treated with a release agent, as is well known the art, to provide a releasable bond of reduced strength where the adhesive 38 on the third portion 34 contacts the front surface of the second portion 32. The adhesive 38 on the third portion 34 contacts the front surface of the second portion 32. The adhesive 38 on the first portion 30 is in contact with the undersurface 14 of the flap 12 of the plastics backing sheet 20 and firmly secures the fastener 26 to the surface 14. The portions 32 and 34 may be considered as a sub-unit of the fastener. This sub-unit is itself releasably attached to the rear surface of the first portion 30 to maintain the fastener in a

compact but easily extendable configuration prior to use. This is accomplished in the first embodiment by the provision of an opening 40 in a central location of the second portion 32. This opening exposes a small area of the adhesive 38 on the front surface of the third portion 34 for contact with the rear surface of the first portion 30, thereby "tacking" the sub-unit to the first portion 30. In the alternative embodiment of Figure 5, the releasable attachment is achieved by the provision of a spot 42 of hot melt glue which is deposited between the rear surfaces of the portions 30, 32 during the manufacture of the fastener or of the diaper.

As best seen in Figures 1, 2 and 5, the fastener 26 is so constructed and so located in a box pleat diaper that, as the diaper is presented to the consumer, only the small projecting grippable tab 36 is visible. This tab is conveniently located to be gripped by the person applying the diaper and pulled in a direction perpendicularly away from the lateral margin edge 18 of the flap 12. As best seen in Figure 3, this results in a breaking of the releasable bond which tacks the sub-unit to the first portion 30 and, simultaneously, a peeling of the third portion 34 from the second portion 32. This leads to the complete extension of the fastener 26 as shown in Figure 4. With the fastener 26 fully extended the adhesive coated portion 34 is exposed for contact with a remote portion of the diaper to secure the diaper to an infant. The non-adhesive second portion 32 is disposed in the region most likely to contact the infant's skin should the diaper be improperly sized or become twisted or stretched by the infant's movements. There is thus a reduced chance of contact of the adhesive 38 with the skin of the infant.

#### WHAT WE CLAIM IS:—

1. A diaper fastener for use on a diaper having a plastics backing sheet, the fastener comprising a strip of tape folded into a "Z" configuration having contiguous first, second and third portions, the strip having a front surface and a rear surface and being coated with an adhesive on the front surface of the first and third portions, the front surface of the second portion being free of adhesive, and the front surface of the third portion being in contact with the front surface of the second portion thereby forming a sub-unit comprising the second and third portions, which sub-unit is releasably attached to the rear surface of the first portion.

2. A diaper fastener as claimed in Claim 1 wherein the second portion has an opening through which adhesive on the

third portion is exposed for contact with the rear surface of the first portion.

3. A diaper fastener as claimed in Claim 2 wherein the opening is centrally located in the second portion.

4. A diaper fastener as claimed in Claim 1 including an adhesive releasably attaching the rear surfaces of the first and second portions together over a limited portion of those surfaces.

5. A diaper fastener as claimed in Claim 4 wherein the adhesive releasably attaching together the rear surfaces of the first and second portions comprises a spot of hot melt glue.

6. A diaper fastener as claimed in any of the preceding Claims which includes a grippable tab projecting from the third portion.

7. A diaper fastener substantially as described with reference to Figures 1 to 4 or Figure 5 of the accompanying drawings.

8. A diaper having a plastics backing sheet and a fastener as claimed in any of the preceding Claims adhesively secured to the backing sheet by means of the adhesive on the front surface of the first portion of the strip of tape.

9. A disposable diaper having an absorbent body and a plastics backing sheet folded into a box pleat configuration which provides an undersurface of a lateral box pleat flap, and having a fastener as claimed in Claim 6 or Claim 7 adhesively secured to the backing sheet by means of the adhesive on the front surface of the first portion of the strip of tape with the grippable tab projecting beyond the lateral marginal edge of the flap.

KILBURN & STRODE,

Chartered Patent Agents.  
Agents for the Applicants.

FIG. 1

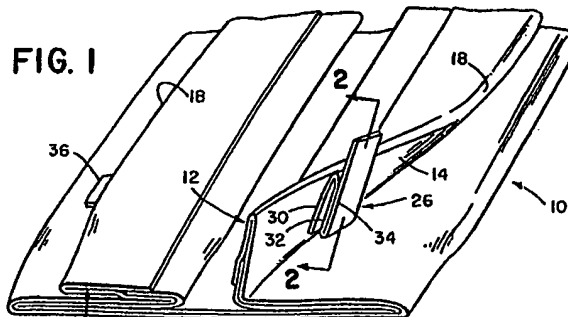


FIG. 2

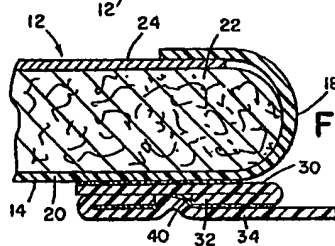


FIG. 5

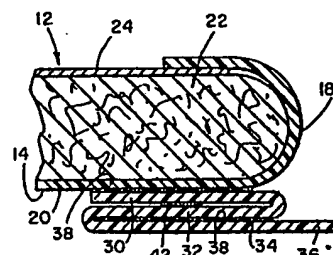


FIG. 3

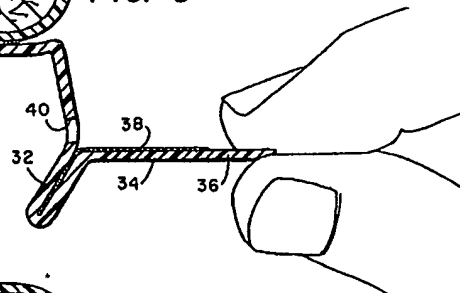
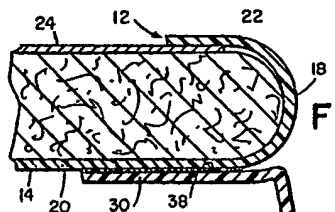


FIG. 4

